POPOV, Viktor Stepanovich; MANSUROV, Nikolay Nikolayevich [deceased];
NIKOLAYEV, Sergey Aleksandrovich; ZHUKHOVITSKIY, B.Ya., dotsent,
kand.tekhn.nauk, red.; VORONIN, K.P., tekhn.red.

[Electrical engineering] Elektrotekhnika. Izd.7., perer. i dop.
Moskva, Gos.energ.izd-vo, 1960. 543 p.   (MIRA 14:3)

(Electrical engineering)

PAVLICHENKO, V.S., kand. tekhn.   .; POPOV, V.S., kand.tekhn.
        nauk, retsenzent

    [Resistance welding of parts with a closed contour]
    Kontaktnaia svarka izdeli⁹ ·amknutoi formy. Moskva, Ma-
    shinostroenie, 1964. 112 p.   (MIRA 17:8)

POPOV, V. S.; DMITRICHENKO, N. S.

Wear resistance of certain hard facings and standard steels used for metal dies for operation in an abrasive medium. Izv. vys. ucheb. zav.; chern. met. 7 no.6:164-162 '64. (MIRA 17:7)

1. Zaporozhskiy mashinostroitel'nyy institut i Zaporozhskiy ogneupornyy zavod.

POPOV, Viktor Stepanovich; MANSUROV, Nikolay Nikolayevich[deceased];
NIKOLAYEV, Sergey Aleksandrovich; ZHUKHOVITSKIY, I.Ya.,
dots., kand. tekhn. nauk

[Electrical engineering] Elektrotekhnika. Izd. 7, perer. i
dop. Moskva, Izd-vo "Energiia," 1964. 559 p. (MIRA 17:7)

POPOV, V.S.

Controlled phase-sensitive circuits with heater re-
sistances. Izm.tekh. no.4:36-40 Ap '60.

(Electric circuits)   (MIRA 13:8)

30485
S/194/61/000/008/002/092
D201/D304

9.2165 (1001, 1482, 1331)

AUTHOR: Popov, V.S.

TITLE: Measuring power by means of heated resistors

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika,
             no. 8, 1961, 7, abstract 8 A44 (V sb. Vopr. obshch.
             elektropriborostr., Kiyev, AN USSR, 1960, 246-256)
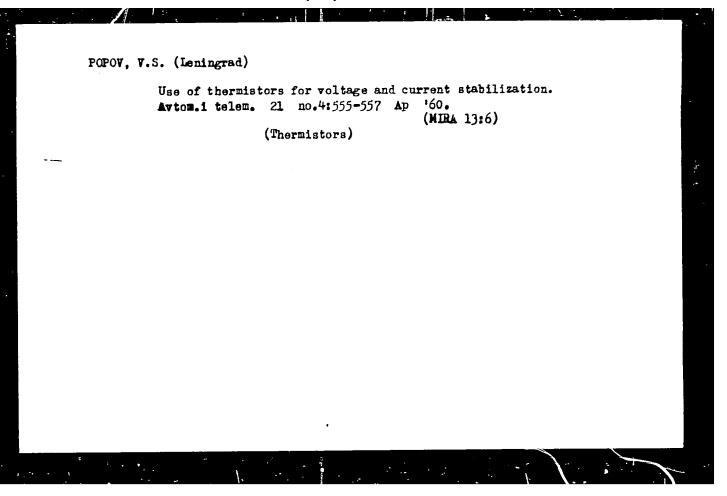
TEXT: The basic parameter of the power transducer with
heated resistors (HR) is electrical resistance and hence it may be
applied to several telecontrol systems, in which the use of other
types of static power transducers is cumbersome. The HR consists
of a tungsten spiral and a nichrome heater in a glass insulating
tube going through the spiral. The heater and the spiral are plac-
ed in a non-evacuated glass envelope which acts as protection again-
st mechanical damage. Small inertia and high sensitivity are ob-
tained by the use of thin wires. Design and technical details of
HR are given. HR's as designed at the IEM AS UkrSSR may be used

Card 1/2

Popov, V. S.

POPOV, V.S. (Leningrad)

Use of thermistors for voltage and current stabilization.
Avtom.1 telem. 21 no.4:555-557 Ap '60.
(MIRA 13:6)
(Thermistors)

POPOV, V.S.

Wattmeter-converter with metal heater resistors. Avtom.kont.i
izm.tekh. no.4:12-22 '60.   (MIRA 13:8)
            (Temperature--Measurement)

POPOV, V.S. (Leningrad)

Thermopile with two heaters and its use for electric measurements
and in electronic calculating machines. Izv. AN SSSR. Otd. takh.
nauk. Energ. i avtomat. no.1:138-143 Ja-F '60. (MIRA 13:2)
(Electric measurements) (Electronic calculating machines)
(Thermopiles)

POPOV, V.S. (Leningrad); SOLOV'YEVA, M.N. (Leningrad); MAL'TSEV, Yu.A. (Leningrad)

Electric current stabilizer. Elektrichestvo no.8:36-39 Ag '60.
(MIRA 13:8)
(Electric controllers)

ZARGAR'YANTS, M.N.; POPOV, V.S.; TAUBKIN, I.I.

Device for measuring the depth of occurence. Prib. i tekh.eksp.
6 no.6:117-120 N-D '61.   (MIRA 14:11)
                        (Electric measurements)

S/024/62/000/002/011/012
E140/E135

AUTHOR: Popov, V.S. (Leningrad)

TITLE: On a method of reducing thermistor lag

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye
             tekhnicheskikh nauk. Energetika i avtomatika,
             no.2, 1962, 156-161

TEXT: The Institut Elektromekhaniki (Institute of
Electromechanics), Leningrad, has studied negative feedback
circuits for reducing the time constant of thermistor
temperature detectors. Factors of 75:1 have been obtained,
bringing the effective time constants down to the order of
40-50 ms. It is suggested that these devices can be used in
transient studies of gas parameters.
There are 2 figures.
SUBMITTED: April 27, 1961

Card 1/1

POPOV, Vladimir Serghievici [Popov, Vladimir Sergeyevich], candidat in stiinte tehnice (Leningrad)

Use of the resistances with indirect heating in the field of electric measurements. Electronica 9 no.11:395-400 N '61.

1. Conducatorul unui colectiv in laboratorul de telemecanica de la Institutul de electromecanic din Leningrad al Academiei de Stiinte a U. R. S. S.

POPOV, V.S.

Conference of the permanent seminar of the Leningrad Branch
of the Scientific, Engineering and Technological Society of
the Instrument Industry. Priborostroenie no.6:31 Je '61.
(MIRA 14:6)
(Leningrad--Technical societies)

NUZHDINA, L.A.; POPOV, V.S.

Device for measuring and registering corona losses in high-voltage
electric power transmission lines. Sbor. rab. vop. elektromekh.
no.5:287-298 '61.
                    (Corona (Electricity))
                    (Electric power distribution)
                    (Electric measurements)

(MIRA 14:6)

MANSUROV, Nikolay Nikolayevich [deceased]; POPOV, Viktor Stepanovich.
Prinimal uchastiye SAPKOV, G.N., kand. tekhn. nauk;
ZHUKHOVITSKIY, B.Ya., dotsent, kand. tekhn. nauk, red.;
VORONIN, K.P., tekhn. red.

[Theoretical electrical engineering] Teoreticheskaia elektro-
tekhnika. Izd.8., perer. Moskva, Gos.energ.izd-vo, 1961. 655 p.
(MIRA 15:2)
(Electric engineering)

$9.4310 (1143, 1150, 1160)$

AUTHORS: Zargar'yants, M.N., Popov, V.S., Taubkin, I.I.

TITLE: An apparatus for measuring the depth of the
               p-n transition layer

PERIODICAL: Pribory i tekhnika eksperimenta, no.6, 1961, 117-120

TEXT: An apparatus is described for determining the depth of
the p-n transition layer in semiconductors.   The method is based
on the exact measurement of the tangent of the angle of slope
across a section of the material and the position of the
transition layer is determined by the reversal of the thermal emf
with respect to a heated probe.   Measurements can be made at room
temperature and at the temperature of liquid nitrogen.   The
apparatus is of simple construction;   its basic design is shown
in the figure.   The distance OO_1 and the angle α must be
measured accurately.   The sample is mounted on a slide so that
it can be moved horizontally.   A microscope is used to
determine the position of the probe on the sample and the
movement of the slide is measured by means of a micrometer head
and a dial indicator.   The sample can also be rotated in the
vertical plane, so that the angle α can be measured on the same
Card 1/3

33154
S/120/61/000/006/024/041
An apparatus for measuring ...   E039/E485

apparatus.   Measurements of the thermal emf are made by
contacting the sample with a heated copper probe, see figure, and
determining the emf produced with a potentiometer.   The probe is
fixed to the core of an electromagnet which ensures that a constant
pressure is always applied to the sample.   When the electromagnet
is turned off, the probe is raised by a spring, so that the sample
will not be scratched when it is moved.   The overall accuracy of
the measurement is about 4%.   By measuring values of the thermal
emf, it is possible to use the apparatus to determine the
uniformity and other parameters of semiconducting materials.
There are 4 figures and 5 references: 1 Soviet-bloc and 4 non-
Soviet-bloc.   The four references to English language
publications read as follows:
Ref.1: M. Beliveau, Electronics, v.31, no.39, 1958, 98;
Ref.2: R. Glang, J. Electrochem. Soc., v.107, IV, no.4, 1960, 356;
Ref.3: E. Billig, J.J.Dowd, Nature, v.172, 1953, 115;
Ref.4: C.S.Fuller, J.A.Ditzenberger, J. Appl. Phys., v.27, 1956,544.

SUBMITTED: April 12, 1961

Card 2/2

POPOV, V.S.

Heater-type resistance for remote measurements of linear displacements. Izm.tekh. no.1:40-43 Ja '62. (MIRA 14:12)
(Electric measurements)

33134

S/115/62/000/001/006/007
E192/E382

9.2300 (1001, 1153, 1134, 1385)

AUTHOR: Popov, V.S.

TITLE: Heated resistor for telemetering linear displacements

PERIODICAL: Izmeritel'naya tekhnika, no. 1, 1962, 40 - 43

TEXT: The instrument described was designed at the
Institut elektromekhaniki AN SSSR (Institute of Electro-
mechanics of the AS USSR) and it can be regarded as a transducer
which converts mechanical displacement into an increment of
electrical resistance. The heated resistor of the instrument
consists of two identical wire resistors wound on an insulating
tube. The heater is placed inside this tube and its displacement
along the axis of the tube increases the resistance of one
element and reduces that of the other. During reverse displace-
ment the changes of the resistances have opposite "directions".
This system of measuring the displacements has a number of
advantages: 1) unlike potentiometers or selsyns it has no
sliding contacts; 2) since the heater and the resistances
are purely ohmic, they can be supplied from AC or DC;
3) there are no reactive effects. The heated resistor is in the
Card 1/4

33134
S/115/62/000/001/006/007
E192/E382

Heated resistor ....

form of a glass tube of internal diameter 120 μ and external
diameter 180 μ; two tungsten helices are wound on the tube the
diameter of the wire being 12 μ. The heater is in the form of
a glass tube having a diameter of 60 μ with a winding of nichrome
wire. The heater is situated coaxially inside a fixed tube and
is attached to a metal plunger, which can be displaced linearly.
Measurement and recording of the displacements are effected by
measuring the heated resistances by means of an automatic
recording bridge. This is shown in Fig. 2. Under the conditions
of equilibrium :

$$U_{AB} = U_{BC}$$

so that

$$R_K + R_2 + R \frac{R_\omega}{R_\omega + R_p} = R_1 + (R_p - R)\frac{R_\omega}{R_\omega + R_p} \qquad (1)$$

Card 2/4

Heated resistor ....

33134
S/115/62/000/001/006/007
E192/E382

where   R is the resistance between the slider and the slide wire,

R_p is the resistance of the slide wire,

R_J is the resistance of the slide-wire shunt and

R_1, R_2 are the helical heated resistances.

The instrument of Fig. 2 can be used in those cases when the measured object is situated near the instrument. On the other hand, a special potentiometer-type system was developed for the telemetering of linear displacements. The dynamic or transient behaviour of this system is investigated and it is shown that, under certain conditions, the temperature of the heated resistor can undergo damped sinusoidal fluctuations. The instrument can be used for measuring displacements of not greater than 5 - 4 mm and its sensitivity at these displacements is about 4 mA/mm. The changes of the supply voltages and the gain of the amplifier do not cause errors greater than 0.4 - 1%. The instrument can be used for the measurement of pressure, differential pressure, angular displacement, velocity of flow

Card 5/4

33134
S/115/62/000/001/006/007
E192/E382

...ated resistor ....

...d other quantities which can be converted into linear
...splacements.   There are 4 figures.

Fig. 2:

Card 4/4

37779
S/119/62/000/005/003/005
D201/D308

9.6/00

AUTHOR: Popov, V. S.

TITLE: An angular displacement pick-up

PERIODICAL: Priborostroyeniye, no. 5, 1962, 16-17

TEXT: The author describes and gives a short theoretical analysis
of a contactless angular displacement telemetering pick-up, de-
veloped at the ИЭМ (IEM) AS USSR and based on the fact that the
position of a heated platinum wire in air determines the heat con-
vection from it. The sensitivity of the arrangement can be in-
creased by utilizing the heat convection changes between two wires
placed side by side, one of the wires being indirectly heated.
The described pick-up consists of a wire, wound on a hollow glass
tube with the heating element inside. The heater is made of an
oxide coated nichrome wire, 20 microns in diameter, wound on a
molybdenum glass rod, 60 microns external diameter. The tube with
heating resistance is rigidly fixed on a tubular support. The
heated resistance is fixed on the moving object. When the latter

Card 1/2

An angular displacement ...

S/119/62/000/005/003/005
D201/D308

moves with respect to the horizontal plane, the heat transfer con-
ditions between the two wires change and cause a change in resist-
ance of the heated resistor, producing the unbalance of the bridge
in one arm of which it is inserted. Experiments have shown that
for equal lengths of the heating and heated wires, the pick-up is
the most sensitive to angular displacement when the heater is one
third of its length inside the tube with heated wire. The relative
angular movement is in practice limited to 90°. The ambient tem-
perature is compensated for by using a tungsten or copper wire in
one of the bridge arms. The theoretical analysis shows that the
time constant determining the transient of the system is K times
smaller (K – overall gain of the system) than the time constant
of the heated wire, provided that K is not excessive. In the ex-
periment a 3-stage amplifier was used, the sensitivity obtained
was better than 0.3 – 0.4° and error due to the ambient charge by
+ 10°, was less than 0.4%. The measurements may be made both with
d.c. and a.c. There are 3 figures.

Card 2/2

9,2100 (1385, 1153, 1159)
9,2200 (1001, 1482)

25454
S/103/62/023/003/009/016
D201/D301

AUTHORS: Zotov, L.V., and Popov, V.S. (Kiyev, Leningrad)

TITLE: Heated metal resistor multipliers and dividers

PERIODICAL: Avtomatika i telemekhanika, v. 23, no. 3, 1962,
             365 – 370 ·

TEXT: The authors give the theory of voltage multipliers and divi-
ders designed around metal resistors, consider the bridge method of
multiplication and division, and analyze its errors. The bridge me-
thod is based on the fact that when a metal wire R is inserted in
one of the bridge arms and heated by applying a voltage U_1 of one
frequency, while the bridge supply voltage U_2 has a different fre-
quency, then the detector voltage U_D is proportional to the product
U_1 and U_2, providing U_1 lies within the linear part of the voltam-
pere characteristic of the heated resistance, and voltage U_2 or sup-
ply current I_2 are small enough not to heat the resistance. The ab-
solute multiplication error γ appears when U_1 deviates from its no-

Card 1/3

Heated metal resistor multipliers ...   S/103/62/023/003/009/016
D201/D301

minal value U_{10} as a result of the destruction of proportionality between the function $F(U_1)$ and the argument U_1. The bridge has been experimentally tried for a platinum wire 24 microns in diameter and 20 mm long. The bridge supply current I_2 was 7.5 mA. The nominal voltage U_{10} was taken as 2000 mV. The results obtained show a proportionality between U_D and U_1 accurate to within 0.5 % for voltage changes from 1 - 5 V. The temperature error of the multiplying arrangement is less than 0.2 % for ± 10°C temperature changes. Types A and B heated resistances were investigated. Type A consists of a heater, a platinum wire 50 microns in diameter, placed in a thin molybdenym glass tube, with a heating element wound around it. In type A the sensing element may be used as a heater and vice versa. The time constant of the heated element is 0.6 sec. Type B is a copper wire with glass insulation, with a 5 micron wire wound on. The A wire diameter is 3 microns, with glass insulation 12 microns. Its time constant is 0.17 sec. Both types produced approximately the same results, with $U_D = f(U_1) = 0.1 \ U_1$ deviating not more than 0.6% of its nominal value. The change of frequency of U_1 from 20 to 200 kc/s had no effect. In the divider arrangement the voltage U_2 to be

Card 2/3

ZOTOV, L.V.; POPOV, V.S.

Multiplying and dividing devices using heated metal resistances.
Avtom. i telem. 23 no.3:365-370 Mr '62.
(MIRA 15:3)
(Counting devices)(Electric networks)

POPOV, V.S. (Leningrad)

Concerning a certain method for decreasing the inertness of net-
works with thermal transducers. Izv.AN SSSR.Otd.tekh.nauk.Energ.
i avtom. no.2:156-161 Mr-Ap '62.   (MIRA 15:4)
    (Electric networks)   (Transducers)   (Thermistors)

DOLINSKIY, E.I.; POPOV, V.S.

Regge poles and resonance nuclear reactions. Part 2. Zhur. eksp. i teor. fiz. 47 no.2:697-707 Ag '64.   (MIRA 17:10)

1. Institut teoreticheskoy i eksperimental'noy fiziki gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii.

PERELOMOV, A.M.; POPOV, V.S.

Geometrical method for decomposing the groups $SU(4)$ and $SU(3)$ in the subgroups $SU(2) \otimes SU(2)$ and $O(3)$. IAd. fiz. 2 no.4: 738-747 O '65.   (MIRA 18:11)

1. Institut teoreticheskoy i eksperimental'noy fiziki Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR.

POPOV, Vladimir Sergeyevich; SIDEL'NIKOV, V.V., retsenzent;
CHERNYSHEV, V.Ye., retsenzent; ROZHDESTVENSKAYA, T.B.,
otv. red.

[Heated metal resistors in electric measuring instruments
and automatic control] Metallicheskie podogrevaemye sopro-
tivleniia v elektroizmeritel'noi tekhnike i avtomatike.
Moskva, Izd-vo "Nauka," 1964. 226 p.   (MIRA 17:6)

ABSTRACT: Ionization produced in a system bound by short-range forces induced by an electromagnetic wave with arbitary elliptic polarization is investigated. In the case of a weak field $F \ll F_0$, $\omega \ll \omega_0$ (F_0 is the intra-atomic field, ω_0 is a characteristic atomic frequency) formulas are derived for the ionization probability expressed as a sum of probabilities of multi-photon process. A formula is also obtained for the momentum spectrum of the emitted electrons. Transition to the adiabatic approximation for the case of low frequencies ($\gamma \ll 1$) is considered. Asymptotic formulas are obtained for the total ionization probability in the "anti-adiabatic" case ($\gamma \gg 1$). It is shown that with an increase in ellipticity ε of the incident light the ionization probability decreases, other conditions being equal.

Card 1/2

ACC NR: AP6024892

In the limiting cases of $\varepsilon = 0$ (linear polarization) and $\varepsilon = \pm 1$ (circular polarization) the formulas obtained are equal to those derived by the authors in an earlier paper (Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, 1966, 1393). A simple quasiclassical method for obtaining the main (exponential) factor in the formula for the ionization probability is presented. Some properties of the solutions of the Shroedinger equation for potentials with a Coulomb tail are discussed. Orig. art. has: 71 formulas and 6 figures.   [CB]

SUB CODE: 20/ SUBM DATE: 16Feb66/ ORIG REF: 010/ OTH REF: 004

Card 2/2

L 36126-66   EWT(1)   AT

ACC NR: AP6018819   SOURCE CODE: UR/0056/66/050/005/1393/1409

AUTHOR: Perelomov, A. M.; Popov, V. S.; Terent'yev, M. V.

ORG: none

TITLE: Ionization of atoms in an a-c field

SOURCE: Zh. eksper. i teor. fiz., v. 50, no. 5, 1966, 1393-1409

TOPIC TAGS: atom, ionization, approximation method, adiabatic approximation, bound state, electromagnetic wave polarization, Coulomb interaction, alternating current

ABSTRACT: A method has been developed for calculating the ionization probability of the bound state under the effect of an a-c field. The method is valid under the conditions $F \ll F_0$, $\omega \ll \omega_0$ (ω and F are the frequency and amplitude of the external field, $\omega_0 = \chi^2/2$ and $F_0 = \chi^3$ are the respective atomic quantities). The quasi-classical nature of the motion of a particle in a homogeneous electric field has been exploited in the method which extends the usual quasi-classical approximation to the nonstationary case. The adiabatic approximation

Card 1/2

ROSHAL', A.S.; POPOV, V.S.

Distributed coupling device for a fast cyclotron wave. Izv. vys. ucheb. zav.; radiofiz. 7 no.5:903-913 '64.

(MIRA 18:2)

1. Moskovskiy gosudarstvennyy universitet.

POPOV, V.S.; BRYKOV, N.N.; DMITRICHENKO, N.S.

Investigating the durability of 20Kh steel plates of press-molds.
Ogneupory 30 no.1:14-17 '65. (MIRA 18:3)

1. Zaporozhskiy mashinostroitel'nyy institut im. V.Ya.Chubarya
(for Popov, Brykov). 2. Zaporozhskiy ogneupornyy zavod (for
Dmitrichenko).

BALUKHOVSKIY, N.F.; GAVRISH, V.K.; KLITOCHENKO, I.F.; POPOV , V.S.

Concerning the super-deep Dnieper-Donets oil well. Neft. i gaz.
prom. no.4:3-6   O-D '64   (MIRA 18:2)

POPOV, V.S., kand. tekhn. nauk; BRYKOV, N.N., inzh.

Effect of chromium and silicon on the abrasive wear resistance
of cast iron. Mashinostroenie no.5:37 S-O '64   (MIRA 18:2)

POPOV, V.S.; BRYKOV, N.N.; DMITRICHENKO, N.S.

Using white cast iron for the lining of metal dier. Ogneupory
29 no.4:160-164 '64.   (MIRA 17:4)

1. Zaporozhskiy mashinostroitel'nyy institut imeni V.Ya.Chubarya
(for Popov, Brykov). 2. Zaporozhskiy ogneupornyy zavod (for
Dmitrichenko).

ARBUZOV, Yu.N.; ARBUZOV, L.S.; GIDALEVICH, B.A ; POPOV, V.S.,
red.; NATSIK, P.T., red.; YAITSKIY, G.G., red.;
KOMENDANT, K.P., red.

[Building materials of Kherson Province; mineral raw
material base] Stroitel'nye materialy Khersonskoi ob-
lasti; mineral'no-syr'evaia baza. Kiev, Gosstroiizdat
USSR, 1964. 102 p.   (MIRA 17:9)

1. Dneprogeologiya, trust.

ACCESSION NR: AP4037598   S/0056/64/046/005/1829/1841

AUTHORS: Popov, V. S.; Dolinskiy, E. I.

TITLE: Group properties of the complex angular momentum

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 5, 1964, 1829-1841

TOPIC TAGS: complex angular momentum, group theory, rotation group, irreducible representation, Regge pole

ABSTRACT: The author considers representations of the rotation group in three dimensions corresponding to arbitrary complex eigenvalues of the angular momentum squared operator. He shows that it is possible to introduce eigenfunctions and to define for them a norm which is finite and rotation-invariant, in spite of the fact that the eigenfunctions are unbounded on the unit sphere. Matrices for finite rotations are also obtained which provide a natural generalization of the group-theoretical properties of the rotation

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ACCESSION NR: AP4037598

group. However, in contrast to the integer or half-odd-integer eigenvalue cases, when the eigenvalues are arbitrary complex numbers the representations of the rotation group are infinite-dimensional; that is to say there exists no irreducible representation that is finite-dimensional. In this connection questions of convergence of the infinite series that arise in the process of calculations with these complex eigenvalues and the corresponding eigenfunctions are investigated and it is shown that, with appropriate regularization procedures, all answers are finite. The regularization procedure involves, among other things, the use of the concept of a general- ized sum of a series, which is the sum of a divergent series obtained by analytic continuation in some parameter such that for certain values of the parameter the series converges to an analytic function in that parameter. Explicit expressions are given for the finite- rotation matrices and addition theorems for them are derived. "The authors express deep gratitude to I. S. Shapiro for numerous fruit- ful discussions in the course of the work." Orig. art. has: 47

Card 2/3

ACCESSION NR: AP4037598

formulas.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki
(Institute of Theoretical and Experimental Physics); Institut yadernoy
fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuc-
lear Physics, Moscow State University).

SUBMITTED: 27Nov63   DATE ACQ: 09Jun64   ENCL: 00

SUB CODE: GP   NR REF SOV: 009   OTHER: 009

Card 3/3

ACCESSION NR: AP4025930   S/0056/64/046/003/0970/0984

AUTHORS: Popov, V. S.; Dolinskiy, E. I.

TITLE: Regge poles and resonance nuclear reactions

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 46,
no. 3, 1964, 970-984

TOPIC TAGS: Regge pole, resonance nuclear reaction, resonance level
angular momentum, resonance level proper asymmetry, compensation
analysis, scattering angle, Breit Wigner term, signature, Alpha
particle, carbon 12, complex angular momentum, oxygen 16

ABSTRACT: Resonances in low energy nuclear reactions are considered
from the standpoint of the Regge pole concept. The asymmetry that
arises from the circumstance that the angular momentum of the reso-
nance level is a complex number (the proper asymmetry of the reso-
nance level -- p.a.l.) is defined, and the possibility of its ex-

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ACCESSION NR: AP4025930

perimental observation is considered. Since the p.a.l can be dis-
torted if the contribution from one resonance level (Regge pole)
is compensated by the contribution from far resonances, and also by
the integral term contained in the "Reggeized" amplitude, the prob-
lem of compensation is analyzed and it is shown that there is a wide
region of scattering angles in which compensation is unimportant and
the p.a.l can be observed experimentally, thus making possible de-
termination of the motion of the Regge poles at energies close to
resonance. The formulas for the amplitudes of the reactions of the
type A + x → B + y are given, which contain along with the main
Bright-Wigner terms also the effect of the p.a.l. The signature of
the resonance level (a new quantum number) is defined and con-
sidered briefly. The data on the phase-shift analysis of elastic
resonance scattering of α particles from C^{12} at α-particle energies
up to 5 MeV is considered from the point of view of the theory of
complex angular momenta, and it is shown that the energy dependence
of the small nonresonance phases can yield the trajectories of the

Card   2/3

ACCESSION NR: AP4025930

Regge poles corresponding to the first three excited levels of the component O^{16} nucleus. Orig. art. has: 6 figures, 41 formulas, and 2 tables.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki (Institute of Theoretical and Experimental Physics); Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Nuclear Physics Institute, Moscow State University)

SUBMITTED: 10Aug63   / DATE ACQ: 16Apr64   ENCL: 00

SUB CODE: PH   . NR REF SOV: 008   OTHER: 016

Card   3/3

POPOV, V.S., kand.tekhn.nauk; LYASHCHINSKIY, B.I., inzh.; PONOMARENKO, Ye. P., inzh.

Heavy-duty steel-bronze parts. Mashinostroenie no.4:107-110 Jl-Ag '63. (MIRA 17:2)

1. Zaporozhskiy mashinostroitel'nyy institut im. V.Ya.Chubarya.

POPOV, V.S.

Using the phase coordination method in determining the radii of
four Cepheids. Izv.GAO 23 no.2:107-109 '63.   (MIRA 16:12)

MEL'NIKOV, O.A.; KUPREVICH, N.F.; ZHUKOVA, L.N.; POPOV, V.S.

Determination of the spectrophotometric gradients of A-type stars·
by the photoelectric method. Izv.GAO 23 no.2:66-71 '63.
(MIRA 16:12)

POPOV, V.S.

Hydrochemical study of underground waters as a method of searching for
complex ore deposits (as exemplified by the central Kansay deposit in the
southwestern Karamazar Mountains). Uch. zap. SAIGIMSa no.7:159-164 '62.
(MIRA 17:2)

1. Sredneaziatskiy nauchno-issledovatel'skiy institut geologii i mine-
ral'nogo syr'ya, Tashkent.

POPOV, V.S.; LYASHCHINSKIY, B.I.

Using an electric current for the crushing of electrometallurgically manufactured ferromanganese. Trudy Zapor. mashinostroi. inst. 4: 143-153 '59.

(MIRA 17:1)

SKROBOV, S.A., glav. red.; TYZHNOV, A.V., zam. glav. red.; SHABAROV,
N.V., zam. glav. red.; AMMOSOV, I.I., redaktor;
red.; BURTSEV, D.N., red.; IVANOV, G.A., red.; KOROTKOV, G.V..
red.; KOTLUKOV, V.A., red.; KUZNETSOV, I.A., red.;
MIRONOV, K.V., redaktor; MOLCHANOV, I.I., redaktor;
NEKIPELOV, V.Ye., red.; PONOMAREV, T.N., red.; POPOV, V.S.,
red.; PROKHOROV, S.P., red.; YAVORSKIY, V.I., red.; LAGUTINA,
V.V., red. toma; LEVENSHTEYN, M.L., red. toma; SHIROKOV, A.Z.,
red. toma; IZRAILEVA, G.A., red.izd-va; KROTOVA, I.Ye., red.
izd-va; IVANOVA, A.G., tokhn. red.

[Geology of coal and combustible shale in the U.S.S.R.]Geologiia
mestorozhdenii uglia i goriuchikh slantsev SSSR. Glav. red. I.I.
Ammosov i dr. Moskva, Gosgeoltekhizdat. Vol.1.[Coal basins and
deposits in the south of the European part of the U.S.S.S;;Donets
Basin, Dnieper Basin, Lvov-Volyn' Basin, deposits of the western
provinces of Moldavia and the Ukraine, White Russia, Trans-
caucasia and the Northern Caucasus] Ugol'nye basseiny i mesto-
rozhdeniia iuga Evropeiskoi chasti SSSR; Donetskii bassein, Dnep-
rovskii bassein, L'vovsko-Volynskii bassein, mestorozhdeniia za-
padnykh oblastei Ukrainy i Moldavii, Belorussii, Severnogo Kav-
kaza i Zakavkaz'ia. 1963. 1210 p.   (MIRA 17:3)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy geologicheskiy komitet.

DOLINSKIY, E. I.; POPOV, V. S.

"Regge Poles and Resonance Nuclear Reactions."

report submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22 Feb 64.

NIIYaF MGU (Sci Res Inst Nuclear Physics, Moscow State Univ)

POPOV, V.S., kand. tekhn. nauk; PONOMARENKO, Ye.P., inzh.;
LYASHCHINSKIY, B.I., inzh.; DROZDOV, N.G., inzh.; VEKZER, V.I.,
inzh.; VOKSHIN, I.I., inzh.

Selecting material for spindle-joint bushings of rolling mills.
Vest. mashinostr. 43 no.12:29-31 D '63.   (MIRA 17:8)

L 60211-65   ENT(d)/ENT(1)/EEC(k)-2/EEC-4/EEC(c)-2/EED-2/EWA(h)   Pr-4 /Pc-4 /Pac-4/
Pae-2/Peb   GS
ACCESSION NR: AT5013569   UR/0000/64/000/000/0212/0222

AUTHOR: Brusilovskiy, K. A. (Candidate of technical sciences);
Kolchenogov, L. S.; Nuzhdina, L. A.; Popov, V. S.

TITLE: Converter of resistance into   electric-oscillation period

SOURCE: AN SSSR. Institut elektromekhaniki. Avtomatika, telemekhanika i
priborostroyeniye (Automatic control, remote control, and instrument
manufacture). Moscow, Izd-vo Nauka, 1964, 212-222

TOPIC TAGS: converter, telemetering, telemetering converter, resistance
frequency converter, analog converter

ABSTRACT: A description, an error analysis, and the results of an experimental
investigation are presented of an analog converter (a laboratory model) that turns
electrical resistance into a proportional period of a-c oscillations. The converter
includes an RC generator, a Wien bridge, and an amplifier. Two frequency-
dependent bridge arms, which constitute an L-shaped quadripole, serve as a
positive-feedback circuit to the generator; the remaining two arms, as a

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L 60211-65
ACCESSION NR: AT5013569

negative-feedback circuit. A TP2/0.5 thermistor is used as a nonlinear resistor. A linear relation between the input resistance and output period is claimed. The error, at high amplifier gains, is largely due to the variation of capacitances in the Wien bridge. The deviation of the output period, when the converter is used as a thermometer, is determined by the temperature coefficient of the resistance thermometer and by the measurand range. The possibility of attaining an overall systematic error of about 0.1% at an ambient temperature of $-20+30C$ and a supply-voltage variation of $\pm 10\%$ is claimed. Orig. art. has: 4 figures and 23 formulas.

ASSOCIATION: none

SUBMITTED: 24Oct64   ENCL: 00   SUB CODE: DP, EC

NO REF SOV: 005   OTHER: 000

Card 2/2

L 4066-66   EWT(m)   DIAAP

ACCESSION NR: AT5022318   UR/3138/65/000/337/0001/0040

AUTHOR: Perelomov, A. M.; Popov, V. S.; Malkin, I. A.

TITLE: Unitary and spin content of SU(6) supermultiplets

SOURCE: USSR. Gosudarstvennyy komitet po ispol'zovaniyu atomnoy energii. Institut teoreticheskoy i eksperimental'noy fiziki. Doklady, no. 337, 1965. Unitarnoye i spinovoye soderzhaniye supermul'tipletov SU(6), 1-40

TOPIC TAGS: unitary symmetry, particle symmetry, quark model, nuclear model

ABSTRACT: A method is developed for determining the number of unitary multiplets with a given spin in a supermultiplet of the SU(6) group. Some of the properties of representations of group SU(n) are summarized and a method is described for narrowing SU(6) representations into the subgroup SU(3) $\otimes$ SU(2), which corresponds physically to an interaction which conserves SU(3) symmetry. This method is used for compiling tables which include reductions of all SU(6) representations given by Young diagrams with total number of cells f = 3, 6 and 9. SU(6) representations are reduced with respect to subgroup SU(4) $\otimes$ SU(2) $\otimes$ U(1), which corresponds to an

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L 4066-66

ACCESSION NR: AT5022318 O

interaction which separates Λ-quarks with non-zero strangeness from p- and n-quarks.
The SU(4) supermultiplets obtained in this reduction are identical to the super-
multiplets which were proposed by Wigner in 1937. A table for the reduction of the
Kronecker product of the simplest representations of group SU(6) is also given.
Orig. art. has: 6 figures, 25 formulas, 2 tables.

ASSOCIATION: Ir none teoreti   y   noy fiziki Gos   ta po
                       energ   eoretical and Experimental
        , State Committee on the Use of Atomic Energy SSSR)

SUBMITTED: 27Mar65   ENCL: 00   SUB CODE: MA, NP

NO REF SOV: 000   OTHER: 000

BVK
Card 2/2

L 4071-66   EWT(d)   LJP(c)

AUTHOR: Perelomov, A. M.; Popov, V. S.

TITLE: Casimir operators for U(n) and SU(n) groups

TOPIC TAGS: particle symmetry, unitary symmetry, group theory, mathematic operator

ABSTRACT: A simple method is proposed for finding Casimir operators C_p of arbitrary order p for U(n) and SU(n) groups. These groups were selected because they are the most interesting from the standpoint of the physicist. The theoretical method proposed in the paper is also applicable to the other classical groups. A formula is derived for the operator C_p:

$$C_p(f_1, \ldots, f_n) = \sum_{i,j=1}^{n} (a^p)_{ij}.$$

This formula theoretically reduces the problem of calculating the eigenvalues of

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L 4071-66

ACCESSION NR: AT5024121   3

Casimir operators to raising the matrix a to the p-th power. This formula is also
useful for calculating the general properties of Casimir operators. The formula
is used for establishing the relationship between the respective Casimir operators
for groups $U(n)$ and $SU(n)$. The explicit values of all C_p operators are given for
completely symmetric and completely anti-symmetric representations. The basic
formula is converted into a form which is convenient for computations and several
first members of the C_p expansion are determined with arbitrary p. The authors
study the relationship between C_p and the symmetrized operator I_p (M. Umezawa,
Nucl. Phys., 48, 111, 1963; 53, 4, 1964). A summary is given of specific formulas
for all C_p operators with $p \leq 6$ and I_p operators with $p \leq 5$. The authors are sin-
cerely grateful to I. S. Shapiro for discussing the results of this work. Orig.
art. has: 56 formulas. $\gamma l, 55$

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki Goskomiteta po is-
pol'zovaniyu atomnoy energii SSSR (Institute of Theoretical and Experimental Phy-
sics, State Committee on the Use of Atomic Energy, SSSR).
SUBMITTED: 22Apr65   ENCL: 00   SUB CODE: MA, NP
NO REF SOV: 002   OTHER: 014
$R \cdot VK$
Card 2/2

L 1841-66   EWT(d)   IJP(c)

ACCESSION NR: AT5022282   UR/3138/65/000/352/0001/0035

AUTHOR: Perelomov, A. M.; Popov, V. S.

TITLE: Casimir operators for the orthogonal and symplectic group

SOURCE: USSR. Gosudarstvennyy komitet po ispol'zovaniyu atomnoy energii. Institut teoreticheskoy i eksperimental'noy fiziki. Doklady, no. 352, 1965. Operatory Kazimira dlya ortogonal'noy i simplekticheskoy gruppy, 1-25

TOPIC TAGS: group theory, eigenvalue, mathematic operator

ABSTRACT: Recently, the authors developed a method (A. M. Perelomov, V. S. Popov Nucl. Phys. /in press/) which makes it possible to find explicit forms as for all Casimir operators in the case of U(n) and SU(n) groups. In the present paper, formulas are obtained in similar fashion for Casimir operators of the remaining classical groups, i.e., the rotation groups 0 (2n + 1) and 0 (2n), and the symplectic group SP(2n). The calculations are performed simultaneously for the orthogonal and the symplectic group. The main result is incorporated in the formula

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L 1841-66
ACCESSION NR: AT5022282

$$ C_p = \sum_{i,j=-h}^{h} (a^p)_{ij} $$

which reduces the calculation of the eigenvalues of Casimir operators to a
matrix multiplication. The various types of classical groups differ only in the
value of certain parameters entering into matrix a_{ij}. Orig. art. has: 44
formulas.

ASSOCIATION: none

SUBMITTED: 20May65   ENCL: 00   SUB CODE: MA

NO REF SOV: 002   OTHER: 008

Card 2/2

L 00985-66   EWT(d)/EWT(m)/T/EWA(m)-2   IJP(c)
ACCESSION NR: AP5019590   UR/0386/65/001/006/0015/0018

AUTHOR: Perelomov, A. M.; Popov, V. S.

TITLE: Casimir operators for a unitary group

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu.
Prilozheniye, v. 1, no. 6, 1965, 15-18

TOPIC TAGS: group theory, particle physics

ABSTRACT: The groups $U(n)$ and $SU(n)$ have been employed most successfully for the
description of the symmetries of elementary particles. A critical problem is that
of finding all invariant operators which may be formed by the generators of the
group. Although the problem has been studied before, explicit expressions for the
characteristic values of invariant operators of arbitrary order have not been given.
A solution for that problem is offered here. "The authors express their sincere
gratitude to I. S. Shapiro for his discussion of the results of this paper." Orig.
art. has: 10 formulas.

ASSOCIATION: none

SUBMITTED: 04May65   ENCL: 00   SUB CODE: MA, NP
NO REF SOV: 001   OTHER: 005
Card 1/1

AUTHOR: Perelomov, A. M.; Popov, V. S.

TITLE: Casimir operators for the orthogonal and symplectic groups

TOPIC TAGS: group theory, operator equation, orthogonal function, mathematic transformation

ABSTRACT: The article deals with the problem of finding invariant operators (Casimir operators C_p) which can be constructed from the generators of a given group of transformations. Since no explicit expressions for the eigenvalues of the operators C_p with $p > 2$ were ever published (with the exception of the operator C_4 for the group $Sp(4)$), the authors derive explicit expressions for C_p with $p = 2, 3,$ and 4, valid for any of the groups $O(2n + 1)$, $O(2n)$, and $Sp(2n)$. Since these are groups of rank n, each contains n independent Casimir operators. The operators C_p with odd p can be expressed in terms of C_{2q} with $2q < p$. In the case of the groups $O(2n + 1)$ and $Sp(2n)$, the operators $C_2, C_4, ..., C_{2n}$ form a complete set of independent invariant operators. A somewhat different approach is used for the group

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L 4884-66
ACCESSION NR: AP5021147

O(2n). The result is also applicable to the case when not all representations of the groups O(2n) and O(2n + 1) can be described by a Young tableau. Orig. art. has: 8 formulas.

ASSOCIATION: none

SUBMITTED: 20May65   ENCL: 00   SUB CODE: GP, MA

NR REF SOV: 001   OTHER: 004

Card 2/2

L 2753-66   EWT(m)/T/EWA(m)-2

ACCESSION NR: AP5024344

UR/0367/65/002/002/0294/0306

AUTHOR: Perelomov, A. M.; Popov, V. S.

TITLE: Transformation of the direct product of irreducible representations of the group SU(3) into irreducible sets

SOURCE: Yadernaya fizika, v. 2, no. 2, 1965, 294-306

TOPIC TAGS: particle symmetry, unitary symmetry, mathematic transformation, mathematic matrix, group theory

ABSTRACT: A geometric method is given for determining the group characters of irreducible representations of the group SU(3). The diagrams for these characters and their physical meanings are discussed. The structure of the Clebsh-Gordan series for the SU(3) group is analyzed. A simple geometric method is developed for expanding the direct product of two irreducible representations of the group SU(3) into irreducible sets. The authors would like to express their sincere gratitude to I. Yu. Kobzarev and L. B. Okun' for discussing the results of this work and for many useful remarks, and also to V. B. Mandel'tsveyg for discussing the tensor method of

Card 1/2

L 2753-66
ACCESSION NR: AP5024344

expansion." Orig. art. has: 9 figures, 25 formulas.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki GKIAE (Institute of Theoretical and Experimental Physics, GKIAE) 44,55

SUBMITTED: 13Jul64   ENCL: 00   SUB CODE: MA

NO REF SOV: 004   OTHER: 015

Card 2/2

PERELOMOV, A.M.; POPOV, V.S.; MALKIN, I.A.

Geometry and spin content of SU(6) supermultiplets. IAd, fiz.
1 no.3:533-542 S '65.
(MIRA 18:9)

1. Institut teoreticheskoy i eksperimental'noy fiziki
Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii.

Popov, V S

Category : USSR/Nuclear Physics - Structure and Properties of Nuclei   C-4

Abs Jour : Ref Zhur - Fizika, No 2, 1957 No 3191

Author   : Estulin, I.V., Popov, V.S., Chukreyev, F.Ye.
Inst   : Moscow State University
Title   : Polarization - Direction Correlation of Successive Gamma Quanta
           From Co60 and Na24.

Orig Pub : Zh. eksperim. i teor. fiziki, 1956, 30, No 6, 1052-1057

Abstract : Description of apparatus for measuring the polarization-direction
           correlation of gamma quanta emitted in cascade. This apparatus, the
           polarization sensitivity of which was first determined experimentally,
           was used to perform measurements on gamma quanta from Co60 and Na24.
           The even parity of the first two excited states of Ni60 and Mg24 was
           proven.

Card   : 1/1

Popov, V. S.

4059

THE POLARIZATION-DIRECTION CORRELATION OF
SUCCESSIVE GAMMA-RAY QUANTA FROM Co^{60} AND Na^{24}
I. V. Estulin, V. S. Popov, and E. E. ... Moscow
State Univ... ... the correlation of polarization

... ...
were carried out for gamma-ray quanta of Co^{60} and Na^{24}
... ...

Popov, V.S.

β-γ-CORRELATION FOR ALLOWED TRANSITIONS IN-
VOLVING NON-CONSERVATION OF PARITY.[2] Yu. V.
Gaponov and V. S. Popov (Moscow State Univ., U.S.S.R.).
Nuclear Phys. 4, 453-6(1957) Sept.

The angular correlation between the directions of emis-
sion of electron and circularly-polarized γ quantum in
cascade β-γ transitions is considered for allowed β transi-
tions, taking account of parity non-conservation. The ef-
fect of the nuclear Coulomb field is neglected. (auth)

$Popov, V. S.$

AUTHOR   GAPONOV, Yu. V., POPOV, V.S.   56-7-37/66
TITLE   β-γ-Correlation of Polarized γ-Quanta in the Case of
             Non-conservation of Parity.
             (β-γ-korrelyatsii dlya razreshennykh perekhodov pri
             nesokhranenii chetnosti.- Russian)
PERIODICAL   Zhurnal Eksperim. i Teoret. Fiziki 1957, Vol 33, Nr 7,
             pp 256-259 (USSR).

ABSTRACT   The present paper investigates the angular correlation
             of an electron and a circularly polarized γ-quantum
             which are emitted in the case of a cascade-like β-γ-
             transition and nonconservation of parity. The influence
             exercised by the COULOMB field of the nucleus is neglected.
             If after β-decay there follows a γ-transition, the pro-
             bability of emission of a γ-quantum under the angle θ
             in the direction of emission of the electron is equal
             to $w(θ) = 1-(\mu\alpha v/c)\cos θ$. Here $\mu = \pm 1$ corresponds
             to the right and left polarization respectively of the
             γ-quantum. v denotes the velocity of the electron
             and α a coefficient which depends on the interaction
             constant, the nuclear moments and the multipole pro-
             perties of the γ-quantum. An explicit expression is
CARD 1/3   given for the coefficient α. Further, the constants

β- γ-Correlation of Polarized γ-Quanta in the Case of Non-conservation of Parity.   56-7-37/66

occurring in this expression are given in detail.
The angular distribution is nonisotropic only in the case of
nonconservation of parity. If the hypothesis of the
longitudinal neutrino is true, the formulae given here
obtain a more simple form. The formula given first can
be generalized for the case that on the β-decay several
successive-transitions follow. The experimental results
confirm the fact that certain coefficients occurring in
these formulae are equal to zero. Therefore the formulae
are simplified considerably; the values of α for several
nuclei computed on these assumptions are shown in a
table. Further tables contain values of the coefficients
occurring in these formulae. In spite of the difficult
measuring of the polarization of the γ-quanta the
experimental investigation of the here discussed effects
is, especially for transitions with $j_2 = j_\gamma$, of advantage.
By investigating this effect the properties of the
HAMILTONIAN of the β-interaction can be determined.

CARD 2/3

56-7-37/66

β-γ-Correlation of Polarized γ-quanta in the Case of
Non-conservation of Parity.

(With 2 Tables)

ASSOCIATION: Moscow State University.
(Moskovskiy gosudarstvennyy universitet.- Russian)
PRESENTED BY: -
SUBMITTED: 4.4. 1957.
AVAILABLE: Library of Congress.

CARD 3/3

56-34-4-46/60

AUTHOR: Popov, V.S.

TITLE: The Total Cross Sections of the Stripping and the Diffraction
            Disintegration of Fast Deuterons in a Nonspherical Nucleus (Polnyye
            secheniya sryva i difraktsionnogo rasshchepleniya bystrykh deytronov
            na nesfericheskom yadre)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol. 34,
            Nr 4, pp. 102?-1022 (USSR)

ABSTRACT: The author here investigates a nucleus which has the shape of an
            ellipsoid of revolution and which is unpolarized for inciding
            nucleons. The kinetic energy of deuterons must be sufficiently
            high in order that the wavelength of the deuteron be much shorter
            than the radius of the nucleus. The influence exercised by the
            Coulomb field upon the nucleus is neglected. First, an expression
            for the amplitudes of the elastic diffraction scattering of deute-
            rons by a nucleus with fixed direction of its axis is determined
            according to a method developed by Akhiyezer and Sitenko (Ref 1)
            and is explicitly written down. This rather complex expression
            can be generalized if the radius of the nucleus is much greater
            than that of the deuteron and if the scattering angles are small.

Card 1/2

The Total Cross Sections of the Stripping and the   56-34-4-46/60
Diffraction Disintegration of Fast Deuterons in a
Nonspherical Nucleus

In particular, an expression for the amplitude of forward scatter-
ing is written down. By averaging over various orientations of the
nucleus the total cross section of all processes is obtained. With
$p \gg 1$ the curvature of the edge of the nucleus can be disregarded
and the stripping probability and the probability of diffraction
disintegration can be made use of, which were calculated for the
unit of length of the screen. The cross sections of stripping and
diffraction disintegration thus obtained are explicitly written
down. In conclusion a formula for the cross section of the elastic
diffraction scattering is given. The author finally thanks
I.S. Shapiro for his discussion of results. There are 2 references,
1 of which is Soviet.

SUBMITTED: January 14, 1958

                1. Deuterons--Scattering

Card 2/2

24(3)

AUTHOR: Popov, V. S.   SOV/56-35-4-25/52

TITLE: The Behavior of a Particle With Arbitrary Spin in an
             External Magnetic Field (Povedeniye chastitsy s proizvol'nym
             spinom vo vneshnem magnitnom pole)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958,
             Vol 35, Nr 4, pp 985 - 988 (USSR)

ABSTRACT: The author of this paper investigates the polarization
             variation of particles having a magnetic dipole
             moment under the action of an external field. The
             problem is investigated by a method of disentangling
             (metod rasputyvaniya) an expression containing non-
             commutating operators suggested by Feynman (Ref 1).
             Only a single problem has hitherto been dealt with
             by this method, viz. that of a harmonic oscillator
             subjected to the influence of an arbitrary force (cf.
             Refs 1 and 4). It is therefore interesting to apply
             this method also to other quantum-mechanical problems.
             Thus, the author here investigates the variation with
Card 1/2   respect to time of the polarization P(t) of particles

The Behavior of /Particle With Arbitrary Spin in an   SOV/_____
External Magnetic Field

        having the magnetic moment $\vec{M} = \gamma \hbar\, I$ (γ -hydromagnetic
        ratio, I-spin moment) under the influence of the external
        magnetic field $\vec{H}$ (t) by means of a "disentangled" S-
        matrix. In conclusion he thanks I.S.Shapiro for his
        interest in this work. There are 4 references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State
           University)

SUBMITTED: May 13, 1958

Card 2/2

24(5)
AUTHORS: Ivanchik, I. I., Popov, V. S.   SOV/56-36-2-22/63

TITLE: Energy- and Angular Distributions in the Processes of
Diffractional Disintegration (Energeticheskiye i uglovyye
raspredeleniya v protsessakh difraktsionnogo rasshchepleniya)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36,
Nr 2, pp 499-504 (USSR)

ABSTRACT: The diffractional disintegration of the deuteron has already
been investigated by Feynberg (Ref 1), Glauber (Ref 2), and by
Akhiyezer and Sitenko (Ref 3). In these works a method which is
similar to that employed by Kirchhoff (Kirkhgof) was used,
which, however, produced good results only within the domain
of the geometric shade. Experimentally, the investigation of
particles produced as a result of the diffractional dis-
integration of a deuteron (neutron + proton) presents
difficulties because of the difficulty of observing neutrons.
The authors of the present paper carry out a theoretical
investigation of the energy- and angular distributions for
particles produced in the diffractional disintegration of a
weakly bound quantum-mechanical system (e.g. deuteron). The
energy distribution obtained is shown by figure 1;

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Energy- and Angular Distributions in the Processes   SOV/56-36-2-22/53
of Diffractional Disintegration

the diagram, for comparison, also contains the corresponding
distribution curve for the stripping reaction. The curves
nearly coincide. Figure 2 shows the angular distribution curve,
which is again compared with angular distribution after a
stripping reaction. The latter shows a sharper decline. The
authors endeavor to explain this difference. Finally, they
thank Ye. L. Feynberg for supervising work as well as for
their detailed discussions. There are 2 figures and
8 references, 6 of which are Soviet.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR
              (Physics Institute imeni P. N. Lebedev of the Academy of
              Sciences, USSR)

SUBMITTED: June 27, 1958

Card 2/2

POPOV, V.S.

Theory of relativistic transformations of wave functions and of
the density matrix of particles with spin. Zhur.eksp.i teor.
fiz. 37 no.4:1116-1126 O '59.   (MIRA 13:5)
              (Particles (Nuclear physics))

83600

S/056/60/038/005/033/050
B006/B063

24.4500

AUTHOR: Popov, V. S.

TITLE: Spin Flip of a Relativistic Particle Having a Magnetic
            Moment and Moving in an External Field

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,
            Vol. 38, No. 5, pp. 1584-1588

TEXT: The present paper describes a theoretical investigation of the
variation of polarization of particles having any spin s and a magnetic
dipole moment $\vec{\mu} = g(e\hbar/2mc)\vec{s}$ under the action of an external electro-
magnetic field. This field is assumed to be macroscopic, that is to say,
particle motion in this field can be described by classical mechanics:

$du_\mu/d\tau = (e/mc)F_{\mu\nu}u_\nu$; (1). The spin pseudovector $\hat{s}_\mu = -\frac{1}{2} i\varepsilon_{\mu\nu\lambda Q}M_{\nu\lambda}P_Q$ is
used, which coincides with the non-relativistic spin operator in the system
of particles at rest. A four-dimensional coordinate system of

η^α, ($\alpha = 0, 1, 2, 3$), is introduced, which is firmly connected with the

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Spin Flip of a Relativistic Particle Having   S/056/60/038/005/033/050
a Magnetic Moment and Moving in an External   B006/B063
Field

particle trajectories as a system at rest. (The trajectories are curves in
the four-dimensional Minkowski space). For the angular velocity vector
of the rotation of polarization in this system of η-axes the author ob-
tains the relation $d\vec{\sigma}/d\tau = [\vec{\Omega} \ \vec{\sigma}]$, where $\Omega_{ij} = -\varkappa_{ij} - g(e/2mc)F_{\mu\nu}\eta_{\mu}^{i}\eta_{\nu}^{j}$.
For the determination of $\vec{\Omega}$ it is necessary to determine the particle tra-
jectory, that is to say, to solve equation (1). This is carried out for the
case where $\vec{E} = 0$ and $\vec{H}$ is an arbitrary function of coordinates and time.
Some explicit formulas are given for $\vec{\Omega}$ in a homogeneous magnetic field.
For a magnetic field that is homogeneous with respect to the z-axis one
obtains the following relations, in the coordinates r, φ, z, and t
$(z \parallel \vec{H})$, for the components of the angular velocity of spin precession:

$$\vec{\Omega} = \left\{ -f \frac{\Omega_L u \cos \theta}{2(1+x)} \ , \ g\Omega_L \left\{ \frac{x}{1+x} \ \frac{u^2 \sin \theta \cos \theta}{2u_0 \Delta} \ , \ \frac{\Omega_L}{1+x} \left[\left(\frac{g}{2} - 1\right)\Delta + \frac{gx}{2\Delta} \right] \right\} \right\}$$

$x = (ea/mc)(u_0/u^2\cos^2\theta) = 1.96 \cdot 10^{-6} \ au_0/u^2\cos^2\theta$ if a is measured in volts.

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POPOV, V. S., Cand Phys-Math Sci -- (diss) "Several problems in relativistic theory concerning particles having spin." Moscow, 1960. 10 pp; (Academy of Sciences USSR, Inst of Physics im P. N. Lebedev); 200 copies; price not given; bibliography at end of text (13 entries); (KL, 32-60, 145)

L 07960-67   EWT(1)

ACC NR: AT6031326   SOURCE CODE: UR/3138/66/000/435/0001/0012

AUTHOR: Perelomov, A. M.; Popov, V. S.; Terent'yev, I. V.

ORG: none

TITLE: Some peculiarities of the solutions to the Schrodinger wave equations for potentials with a Coulomb tail

SOURCE: USSR. Gosudarstvennyy komitet po ispol'zovaniyu atomnoy energii. Institut teoreticheskoy i eksperimental'noy fiziki. Doklady, no. 435, 1966. Neko-toryye svoystva resheniy uravneniya Shredingera dlya potentsialov s kulonovskim khvostom, 1-12

TOPIC TAGS: Schrodinger equation, wave equation, scattering matrix, Coulomb tail

ABSTRACT: An asymptotic form of the wave function $\psi_{\ell m}(z)$ at $x \gg \ell$ has been found for the potentials of the type $V(z) \rightarrow \frac{\gamma}{z}$, $z \rightarrow \infty$. The character of the $\psi_{\ell m}(\rho)$ singularity at the point $\rho^2 = -x^2$ was determined. A connec-tion was found between the $C_{x\ell}$ coefficient in the asymptotic formula derived and the residue of the scattering matrix $S_{\ell}(k)$ at the pole $k = i x$, which

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ACC NR: AT6031326

corresponds to the bound state. Conditions were obtained under which the devia-
tion $V(z)$ at small z from the purely Coulomb potential does not destroy the
higher symmetry of the spectrum of levels. Orig. art. has: 24 formulas.

SUB CODE: 12/ SUBM DATE: 17Mar66/ ORIG REF: 007/ OTH REF: 007/

Card 2/2

GESHKENBEYN, B.V.; POPOV, V.S.

Radiative corrections to β-decay. Zhur.eksp.i teor.fiz. 41
no.1:199-204 Jl '61.
(Beta rays)   (Radioactive substances—Decay)

(MIRA 14:7)

POPOV, V.S.

GESHKENBEYN, B. V.; POPOV, V. S.

"On the Radiative Corrections to β -Decay"

report presented at the 11th Intl. Conference on High Energy Physics, Geneva, 4-11 July 1962

Institute of Theoretical and Experimental Physics

16 6500

AUTHORS: Blokhintsev, L. D., Dolinskiy, E. I., Popov, V. S.

TITLE: Analytical properties of nonrelativistic graphs

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42,
           no. 6, 1962, 1636 - 1646

TEXT: Some problems of the nonrelativistic graph technique are studied.
A nonrelativistic graph with n internal lines and with 1 independent
closed contours can be represented in the form

$$F_{nl} = \lim_{\delta \to +0} \int \prod_{s=1}^{l} d^3 k_s \, d\varepsilon_s \left\{ \prod_{i=1}^{n} (q_i^2 - 2m_i \varepsilon_i - i\delta) \right\}^{-1} .$$

With the aid of a Feynman parametric representation, F_{nl} is derived as a
function of the kinematic invariants X and Λ:

$$F_{nl} = (i\pi^{5/2})^l \, \Gamma \, (n - 5l/2) \lim_{\delta \to +0} \int_0^1 \prod_{l=1}^{n} d\alpha_l \, \delta \left(\sum_{k=1}^{n} \alpha_k - 1 \right) \times \qquad (8).$$

$$\times \prod_{s=1}^{l} \delta \left(\sum_{(s)} \omega_\sigma \alpha_\sigma m_\sigma \right) \Lambda^{-5/2} (X / \Lambda - i\delta)^{-(n-5l/2)} .$$

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L 11910-66   EWT(m)/T/EWA(m)-2

ACC NR: AP6001161   SOURCE CODE: UR/0367/65/002/003/0533/0542

AUTHOR: Perelomov, A. M.; Popov, V. S.; Malkin, I. A.

ORG: Institute of Theoretical and Experimental Physics, GKIAE (Institut teoreticheskoy i eksperimental'noy fiziki)

TITLE: Unitary and spin content of SU(6) supermultiplets

SOURCE: Yadernaya fizika, v. 2, no. 3, 1965, 533-542

TOPIC TAGS: particle interaction, elementary particle

ABSTRACT: A method has been developed which makes it possible to find the content of unitary multiplets of a given spin in the supermultiplet of group SU(6). An expansion table has been compiled for all the representations of SU(6) given by Young's schemes with a total number of cells f = 3, 6, and 9. The supermultiplet of SU(6) has been expanded into Wigner supermultiplets with a fixed value of the hypercharge and spin of quarks: $SU(6) \rightarrow SU(4) \otimes SU(2) \otimes U(1)$. Also given is a table for the expansion of the Kronecker product of the simplest representations of group SU(6). Orig. art. has: 1 figure, 2 tables, and 18 formulas.

SUB CODE: 20 / SUBM DATE: 26Feb65 / OTH REF: 012
Card 1/1 HW

POPOV, Viktor Stepanovich; NIKOLAYEV, Sergeyevich; CHURNOV, A.D., red.

[Electrical engineering] Elektrotekhnika. Moskva, Energiia, 1965. 597 p. (MIRA 18:12)

MANSUROV, Nikolay Nikolayevich [deceased]; POPOV, Viktor
    Stepanovich; SAPKOV, G.N., red.

[Theoretical electrical engineering] Teoreticheskaia elektro-
tekhnika. Izd.9, ispr. Moskva, Energiia, 1965. 624 p.
                                    (MIRA 18:12)

POPOV, V.S.

Analytic properties of the amplitude with respect to the momentum transmitted and the asymptotic behavior of scattering phase. Zhur.eksp. i teor.fiz. 47 no.6:2229-2246 D '64.

(MIRA 18:2)

1. Institut teoreticheskoy i eksperimental'noy fizik Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR.

POPOV, V. S.; DOLINSKIY, E. I.

Regge poles and resonance nuclear reactions. Part 1. Zhur. eksp. i teor. fiz. 46 no. 3:970-984 Mr '64.   (MIRA 17:5)

1. Institut teoreticheskoy i eksperimental'noy fiziki i Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta.

POPOV, Vladimir Sergeyevich, kand. tekhn. nauk; KUTAKOVA, L.I.,
    inzh., red.; VASIL'YEV, Yu.A., red.izd-va; GVIRTS, V.L.,
    tekhn. red.

[Wire resistors with indirect heating and their use in
automatic control systems and measuring devices] Metal-
licheskie provolochnye soprotivleniia s kosvennym pod-
grevom i ikh primenenie v avtomaticheskikh i izmeritel'-
nykh ustroistvakh. Leningrad, 1962. 19 p. (Leningrad-
skii dom nauchno-tekhnicheskoi propagandy. Obmen peredovym
opytom. Seriia: Pribory i elementy avtomatiki, no.2)
                                        (MIRA 16:3)
    (Automatic control) (Electric measurements)
            (Electric resistors)

BROD, I.O.; VITRIK, S.P.; GORDIYEVICH, V.A.; KLITOCHENKO, I.F.;
    KOSOROTOV, S.P.; PALIY, A.M.; POPOV, V.S.

Evaluating the results and the measures for improving prospecting
for oil and gas fields in the Ukraine. Geol.neft i gaza 6
no.10:1-12 O '62.   (MIRA 15:12)

1.Glavnoye upravleniye geologii i okhrany nedr pri Sovete
Ministrov UkrSSR, Ministerstvo geologii i okhrany nedr SSSR i
Moskovskiy gosudarstvennyy universitet.
                    (Ukraine--Petroleum geology)
                    (Ukraine--Gas, Natural--Geology)

POPOV, V.S.

Hard facing the plates of press-molds for the manufacture
of refractory bricks. Avtom.svar. 15 no.10:78-80 O '62.
(MIRA 15:11)

1. Zaporozhskiy mashinostroitel'nyy institut im.
V.Ya. Chubarya.
(Hard facing)

POPOV, V. S., kand. tekhn. nauk, dotsent; DMITRICHENKO, N. S.

Improving the wear resistance of die-casting molds for manu-
facturing refractory articles. Vest. mashinostr. 42 no.10:
45-48 O '62.   (MIRA 15:10)

(Die casting--Equipment and supplies)